CLAIM AMENDMENTS

1. (currently amended): A method for producing a soluble protein domain comprising:

(a) expressing at least two nucleotide sequences each encoding a fusion protein comprised of ~~a fragment~~ different fragments of a starting protein and a protein exhibiting a function,

(b) ~~selecting~~ identifying a fusion protein exhibiting said function from among the proteins ~~synthesized~~ produced in step (a), so as to identify said fusion protein as comprising a fragment of said starting protein that is a soluble domain, **[[~~and~~]]**

(c) synthesizing the soluble domain that is included in the fusion protein ~~selected~~ identified in step (b) in a cell-free system; and

(d) recovering the synthesized soluble domain synthesized in step (c).

2. (canceled)

3. (currently amended): The method of claim 1, wherein said protein exhibiting a function in step (a) is selected from the group consisting of an enzyme, a binding protein, a luminescent protein and a fluorescent protein~~, and functional portions thereof~~.

4. (currently amended): The method of claim 3, wherein said fluorescent protein is a green fluorescent protein (GFP) or a GFP variant ~~thereof~~.

5. (currently amended): The method of claim 1, wherein said ~~selecting~~ identifying in step (b) is performed in cells containing said nucleotide sequences by selecting a clone of said cells which exhibits said function.

6. (previously presented): The method of claim 5, wherein said cells are *Escherichia coli (E. coli)*.

7. (currently amended): The method of claim 1, wherein the nucleotide sequences encoding said fusion proteins are expressed in step (a) in a cell-free system, and wherein said ~~selecting~~ identifying in step (b) is performed by measuring the function of the fusion proteins.

8-9. (canceled)

10. (currently amended): A method for producing a soluble protein domain comprising:

(a) providing an expression vector which expresses a fusion protein of a first protein with a second protein that is a green fluorescent protein (GFP) or a GFP variant ~~thereof~~,

(b) partially digesting said expression vector with DNA decomposing enzyme to obtain two or more DNA fragments of said vector containing deletions of the nucleotide sequence encoding the first protein,

(c) transforming *E. coli* with each of said DNA fragments prepared in step (b) to obtain two or more transformed *E. coli*,

(d) isolating a transformed clone of *E. coli* that emits fluorescence among the transformed *E. coli* thus identifying a clone containing DNA that encodes a fusion protein with a soluble protein domain,

(e) recovering the DNA from the isolated transformed clone, **[[~~and~~]]**

(f) synthesizing the soluble protein domain encoded on the recovered DNA in a cell-free system; and

(g) recovering the s soluble protein domain synthesized in step (f).

11-12. (canceled)

13. (currently amended): A method for producing a soluble protein domain comprising:

(a) providing an expression vector comprising a DNA encoding a fusion protein comprised of a first protein and a DNA ~~coding for~~ encoding a second protein which ~~is functional~~ exhibits a function;

(b) treating said vector with a decomposing enzyme to form two or more digested vectors, each vector comprising a fragment of said DNA encoding the ~~second~~ first protein;

(c) expressing fusion proteins encoded on the digested vectors obtained in step (b);

(d) ~~selecting~~ identifying the fusion protein exhibiting the function characterizing the functional protein among two or more fusion proteins ~~synthesized~~ produced in step (c) as comprising a soluble protein domain of said first protein; **[[~~and~~]]**

(e) synthesizing the soluble protein domain included in the fusion protein selected in step (d) in a cell-free system; and

(f) recovering the soluble protein domain synthesized in step (e).

14. (currently amended): The method of claim 13, wherein the ~~selecting~~ identifying of step (d) is performed by transforming cells with the digested vectors, and selecting a clone of said cells which exhibits said function in the obtained transformants.

15. (currently amended): A method to ~~synthesize~~ produce a soluble domain that is a ~~portion~~ fragment of a starting protein which method comprises

(a) synthesizing, in a cell-free system, a protein identified as said soluble domain by:

[[~~(a)~~]] (i) preparing a multiplicity of fusion proteins, each said fusion protein comprising a functional portion and a fragment of said starting protein,

[[~~(b)~~]] (ii) assessing each fusion protein for the function of the functional portion; and

[[~~(c)~~]] (iii) identifying, as a soluble domain, fragments of said protein which are contained in fusion proteins that exhibit the function of the functional portion; and

(b) recovering the soluble domain synthesized in step (a).

16. (currently amended): The method of claim 15, wherein said preparing of step (i) is performed in a cell-free system.

17. (currently amended): The method of claim 15, wherein said preparing of step (i) is performed intracellularly.

18. (currently amended): The method of claim 17, wherein said preparing of step (i) is performed *in vivo* in *E. coli*.

19. (currently amended): The method of claim 15, wherein the functional portion comprises an enzyme, a binding protein, a luminescent protein or a fluorescent protein ~~or functional portions thereof~~.

20. (currently amended): The method of claim 19, wherein the fluorescent protein is green fluorescent protein (GFP) or a GFP variant ~~thereof~~.

21. (currently amended): A method to produce a soluble protein domain that is a ~~portion~~ fragment of a starting protein which method comprises

(a) expressing, in each of at least two *E. coli* colonies, a fusion protein comprising green fluorescent protein (GFP) or a GFP variant ~~thereof~~ fused to ~~a fragment~~ different fragments of said starting protein and

(b) identifying a transformed *E. coli* colony that emits fluorescence, whereby a colony comprising a fusion protein containing a fragment that is a soluble domain is identified, and

(c) producing the soluble protein domain identified in step (b) in a cell-free system; and

(d) recovering the soluble protein domain synthesized in step (c).

22. (currently amended): The method of claim 21, wherein each said fragment is obtained by a process comprising digesting nucleic acid encoding a fusion protein comprising said GFP or GFP variant and said starting protein with a DNA digesting enzyme.

23. (previously presented): The method of claim 22, wherein said digesting is in only either from the 3′ or 5′ end of the nucleic acid.